



# UNITED STATES PATENT AND TRADEMARK OFFICE

AK

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/050,179	01/18/2002	I-Liang Lin	BHT-3167-37	7583

7590 08/06/2003

DOUGHERTY & TROXELL  
5205 LEESBURG PIKE, SUITE 1404  
FALLS CHURCH, VA 22041

EXAMINER
----------

DIMYAN, MAGID Y

ART UNIT	PAPER NUMBER
----------	--------------

2825

DATE MAILED: 08/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

# Office Action Summary

Application No.

10/050,179

Applicant(s)

LIN ET AL.

Examiner

Magid Y Dimyan

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-10 is/are rejected.
- 7) ☒ Claim(s) 5 and 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

1. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 4, 5, 6, 7, 8, 9, 10, 11 and 12 have been renumbered 3, 4, 5, 6, 7, 8, 9, 10 and 11, respectively. The new numbering scheme is being followed for this Office Action, hereinafter.

2. Claims 2, 3, 4, 8, 9 and 10 are objected to because of the following informalities: the symbols  $\Theta_{ja}$ ,  $\Psi_{jt}$  and  $\Theta_{jc}$  have not been described or explained. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2825

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frost et al (hereinafter, Frost) – U.S. Patent No. 6,581,186, in view of Hwang et al (hereinafter, Hwang) – U.S. Patent No. 5,604,687. Referring to these claims, Frost discloses methods and systems for providing logic cores from logic core providers so that they can be integrated into an IC design using a single logic core generator. A network (e.g., internet, WAN, LAN, etc) is used to receive pertinent design core, utilizing user end interface information via a computer (see Fig. 1; column 1, line 13 – to column 3, line 8; column 5, lines 22 – 38). Frost also teaches the use of a storage media (Fig. 3), a job database needed for the design and simulations (Figs. 5, 6, 8, 10 and 11) as well as a file transfer software mechanism to allow sending the data back to the end-user (Figs. 2 and 3). Although Frost cites the exchange of all relevant data, as well as information needed for the IC circuit design, he does not disclose exchanging thermal or packaging information via a network, as claimed herein. Hwang, however, discloses a thermal analysis system (i.e., module) for analyzing a thermal model of a package in order to design packages more efficiently (see column 1, lines 13 – 29). The thermal analysis system cited by Huang uses a Gauss-Seidel iteration analysis (an application software) of the package data, and the results are displayed (see Fig. 1), as claimed. Since making thermal and package information available to customers via a network (e.g., the internet) will improve design efficiency and also reduce the design and

Art Unit: 2825

analysis cycle time of a packaged device, it would therefore be obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Frost and Hwang to obtain the same inventions, as claimed herein.

5. Claims 2, 3, 4, 8, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frost, in view of Hwang, and further in view of Lasance (13<sup>th</sup> Annual IEEE Semiconductor Thermal Measurement and Management Symposium, 1997). The teachings of Frost and Hwang are recited above, and in their disclosures. However, they do not cite thermal data that include  $\Theta_{ja}$ ,  $\Psi_{jt}$  and  $\Theta_{jc}$ , as defined in the claims in their disclosures. Lasance, on the other hand, cites the importance of using these parameters in package characterization, and refers to the JEDEC standard for these parameters (see page 45, right column). Since, as stated, using these three parameters are very important in IC package design and analysis, it would therefore be obvious to one having ordinary skill in the art at the time the invention was made to combine all three disclosures to obtain the same inventions as claimed herein.

### ***Allowable Subject Matter***

6. Claims 5 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 2825

7. The following is a statement of reasons for the indication of allowable subject matter: these claims pertain to a thermal data simulation report that includes parameters of the percentage of heat dissipation from PCB and package top. Prior art does not teach this limitation.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 5,713,666 to Seelin et al discloses a method and apparatus for measuring thermal properties of electronic components encapsulated in packaging, and measures a junction temperature of the electronic component (see also column 13, lines 39 – 61).

U.S. Patent No. 5,302,022 to Huang et al cites a thermal test apparatus for measuring the thermal heat transfer characteristics of semiconductor packaging material as well as the thermal characteristics of the package design.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Magid Y Dimyan whose telephone number is (703) 308-1354. The examiner can normally be reached on Monday - Friday 8:00 AM - 5:00 PM.


Art Unit: 2825

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S Smith can be reached on (703) 308-1323. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Magid Y Dimyan  
Examiner  
Art Unit 2825

myd  
July 25, 2003

  
MATTHEW SMITH  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800